

**Chapter Test C**

For use after Chapter 4

Perform the indicated operation(s).

1.  $\begin{bmatrix} 1 & 4 \\ 5 & 6 \end{bmatrix} + \begin{bmatrix} 8 & -5 \\ -3 & -7 \end{bmatrix}$

2.  $(-8) \begin{bmatrix} 0 & \frac{1}{2} \\ -2 & -7 \\ 4 & 2 \end{bmatrix}$

3.  $\begin{bmatrix} 1 & -6 \\ 9 & 7 \\ 5 & 3 \end{bmatrix} + \begin{bmatrix} 0 & 3 & 6 \\ 1 & 4 & 7 \\ 2 & 5 & 8 \end{bmatrix}$

4.  $\begin{bmatrix} 2 & -1 & 7 \\ 5 & 8 & 2 \end{bmatrix} - \begin{bmatrix} 2 & 9 & 3 \\ -5 & 2 & -2 \end{bmatrix}$

5.  $\left( \begin{bmatrix} 4 & 0 \\ -1 & 5 \end{bmatrix} - \begin{bmatrix} 6 & -2 \\ 3 & 4 \end{bmatrix} \right) + \begin{bmatrix} 3 & 5 \\ -1 & 8 \end{bmatrix}$

Solve the matrix equation for  $x$  and  $y$ .

6.  $\begin{bmatrix} 2 & -3 \\ -5 & 8 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 10 \\ -26 \end{bmatrix}$

7.  $\begin{bmatrix} 1 & 2 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -9 \\ 14 \end{bmatrix}$

Evaluate the determinant of the matrix.

8.  $\begin{bmatrix} -3 & -1 \\ -7 & -2 \end{bmatrix}$

9.  $\begin{bmatrix} a & c \\ d & b \end{bmatrix}$

10.  $\begin{bmatrix} -1 & 2 & 1 \\ 2 & 0 & 0 \\ 3 & -4 & 2 \end{bmatrix}$

Find the area of the triangle with the given vertices.

11.  $A(8, 6), B(0, 0), C(-5, 4)$

12.  $A(-3, -2), B(5, 5), C(1, 8)$

Use Cramer's Rule to solve the linear system.

13.  $3x + 5y = 1$

$-2x + 3y = 12$

14.  $5x + 10y = 70$

$5x + 25z = 270$

$10y + 25z = 300$

15.  $4x - 3y + z = -8$

$-3x + 2y - 5z = -10$

$2x - 4y + 3z = 8$

**Answers**

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Find the inverse of the matrix.

16.  $\begin{bmatrix} 4 & -3 \\ 2 & -5 \end{bmatrix}$

17.  $\begin{bmatrix} -1 & 4 & 2 \\ -2 & 2 & -3 \end{bmatrix}$

18.  $\begin{bmatrix} 3 & -1 \\ -5 & 2 \end{bmatrix}$

Solve the matrix equation.

19.  $\begin{bmatrix} 12 & 7 \\ 5 & 3 \end{bmatrix}X = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$

20.  $\begin{bmatrix} -6 & -3 \\ 3 & 1 \end{bmatrix}X = \begin{bmatrix} 9 & 12 & 0 \\ -4 & 5 & -2 \end{bmatrix}$

Use an inverse matrix to solve the linear system.

21.  $2x - 3y = 5$

$-3x + y = -4$

22.  $2x + 3y = -8$

$x + 2y = -3$

23. **Encoding** Use the matrix

$$A = \begin{bmatrix} 1 & -2 \\ -1 & 3 \end{bmatrix}$$

to encode the message BREAK A LEG.

24. **Mixed Nuts** Macadamia nuts cost \$.90 per ounce, peanuts cost \$.30 per ounce, and cashews cost \$1.30 per ounce. You want a 20-ounce mixture of macadamia nuts, peanuts, and cashews that costs \$.68 per ounce. If the combined weight of the macadamia nuts and cashews equals the weight of the peanuts, how many ounces of each nut should be used?

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